**Copied from Calculus syllabus**

**SPECIFIC OBJECTIVES & SEMESTER SCHEDULE**

**Chapter 1,2: Limits and Continuity** (wks 1-6)

Outcomes: The student will:

* Evaluate rates of change and limits
* Find tangents to curves

⬩ Calculate limits of a function using the limit laws

⬩ Use the precise definition of a limit

⬩ Evaluate one-sided limits and limits at infinity

* Evaluate infinite limits and vertical asymptotes

⬩ Determine continuity of functions

⬩ Evaluate tangents and derivatives

**Chapter 3,4: Derivatives** (wks 7-14)

Outcomes: The student will:

* + Find tangents and derivatives at a point
  + Express the derivative as a function
  + Utilize differentiation rules for polynomials, exponentials, products, and quotients
  + Express the derivative as a rate of change
  + Find the derivatives of trigonometric functions
  + Utilize the chain rule and parametric equations
  + Use implicit differentiation
  + Evaluate inverse trigonometric functions
  + Find the derivatives of inverse functions (including inverse trig functions), logarithms and hyperbolic functions
  + Solve related rates problems
  + Utilize linearization and differentials

**Chapter 7,8: Applications of Derivatives** (wks 15-24)

Outcomes: The student will:

⬩ Evaluate extreme values of functions

⬩ Utilize the mean value theorem

⬩ Use monotonic functions and the first derivative test

⬩ Utilize the second derivative test to determine concavity and sketch curves

* Solve applied optimization problems
* Examine indeterminate forms and evaluate using L’Hopital’s Rule
* Utilize Newton’s Method
* Evaluate antiderivatives

**Chapter 5: Integrals** (wks 25-28)

Outcomes: The student will:

⬩ Estimate with finite sums

⬩ Use sigma notation and limits of finite sums

⬩ Evaluate definite integrals

⬩ Utilize the fundamental theorem of calculus

⬩ Evaluate indefinite integrals

* Use the substitution rule
* Find the area under a curve and between curves

**Chapter 6: Applications of Definite Integrals** (wks 29-34)

Outcomes: The student will:

⬩ Determine volumes by slicing and rotation about an axis

⬩ Evaluate volumes by cylindrical shells

⬩ Find the lengths of plane curves

⬩ Find moments and centers of mass

⬩ Determine the areas of surfaces of revolution

* Evaluate work problems
* Solve fluid pressure and force problems